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AN INTEGRATIVE FACTOR ANALYSIS OF LEADERSHIP MEASURES AND THEOR--ETC(U)
APR 77 A B SWENEY, L A FIECHTNER, R J SAMORES AF-AFOSR-2001-71

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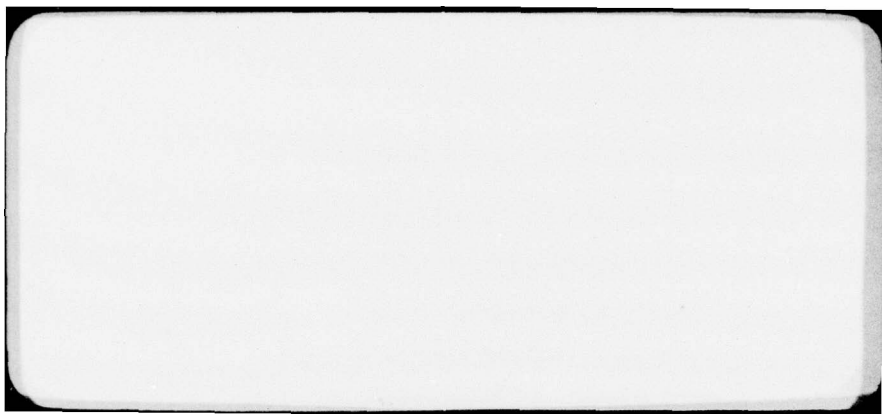

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TECHNICAL REPORT NUMBER 115

AN INTEGRATIVE FACTOR ANALYSIS OF LEADERSHIP MEASURES AND THEORIES

BY

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This research was conducted under the sponsorship of
Air Force Office of Scientific Research - ~~Project #2001~~
AFOSR-71-2001

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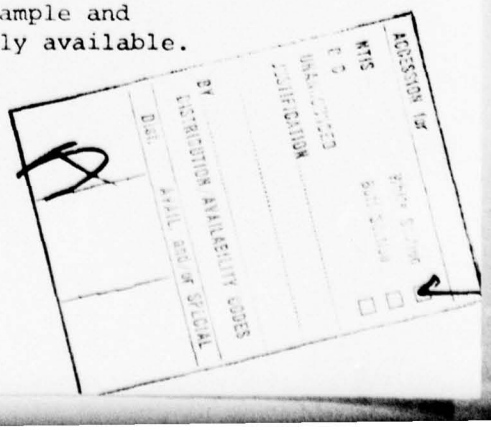
ABSTRACT

One hundred and three working students were given a battery of scales to measure the major leadership theories and models in contemporary use. These include McGregor's Theory X and Y, the Blake-Mouton Management Grid, Fiedler's Contingency Model, Troldahl's Dogmatism, Frenkel Brunswick's Tolerance for Ambiguity, Sanford's F-Scale, Cattell's conservatism, suspicious and dominance scales from the 16 PF, three scales from Sweney's Response to Power Model and eight scales from Sweney's and Fiechtner's Role Reaction Model.

Factor analysis utilizing principle components yielded eleven factors before the Guttman Criterion was met. Varimax rotations were applied to these resulting in eleven independent common factors with relatively high simple structure.

The factors were identified as: Authoritarian Preference, Authoritarian Pressure, Equalitarian Preference, Equalitarian Pressure, Balanced Manager, People Oriented Manager, Assumed Similarity between Opposites, Contemptuous Indulgence, Supportive Values, People Tolerance, and Organizational Tolerance. Except for the first factor, the attempts to integrate the various positions was largely frustrated. The factors tended to be "instrumental factors" indicating that the models and scales developed around them were fairly independent even though they had seemed to be measuring the same generalized qualities. Item-by-item factor analysis of these scales is highly desirable but would require a much larger sample and a much larger computer capacities than are currently available.



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INTRODUCTION

Since Lewin, Lippitt and White's (1939) landmark study, a great deal of attention has been directed toward the methods and effects of leadership. Adorno, Frenkle Brunswick, and Sanford (1950) defined in operational and clinical terms the nature of authoritarianism and prejudice and provided the scientific community with the first psychometric instruments to measure them. Since that time, a number of theories and instruments have been developed, highly independent of each other with very little concerted efforts to reconcile them theoretically or empirically.

Troldahl's (1965) Dogmatism, Frenkel-Brunswick's Intolerance for Ambiguity, Cattell's (1956) Liberalism-Conservatism Scale from the Sixteen P. F. followed closely after the pioneering work. After these came the work of Hemphill (1959) with some newer theories for viewing authoritarianism in management. The Blake-Mouton Managerial Grid (1964) represented not only new instruments

*This research was conducted under the sponsorship of the Air Force Office of Scientific Research - Project # 2001.

for management styles but a new theoretical basis for defining them. Fiedler (1967) found an operational measure which criticially differentiated leaders over situations based on how they rated their subordinates or co-workers. McGregor (1967) posited that major differences in leaders stemmed from different assumptions which they held concerning workers and organizations. These he termed "Theory X" and "Theory Y" but were identified with authoritarianism and equalitarian styles in his discussions.

Sweney (1970) pointed out the shortcomings of discussing leadership styles in isolation and developed the Response to Power Model to integrate three superordinate roles with three subordinate roles to constitute elemental management systems. He, additionally, differentiated the outcomes of measurement into role preferences, role pressures and role perception and hypothesized the kinds of differences which occur. The Role Response Model was developed by Sweney and Fiechtner (1973) to explain the motivation for organizational roles in terms of the interactions between superordinates and subordinates.

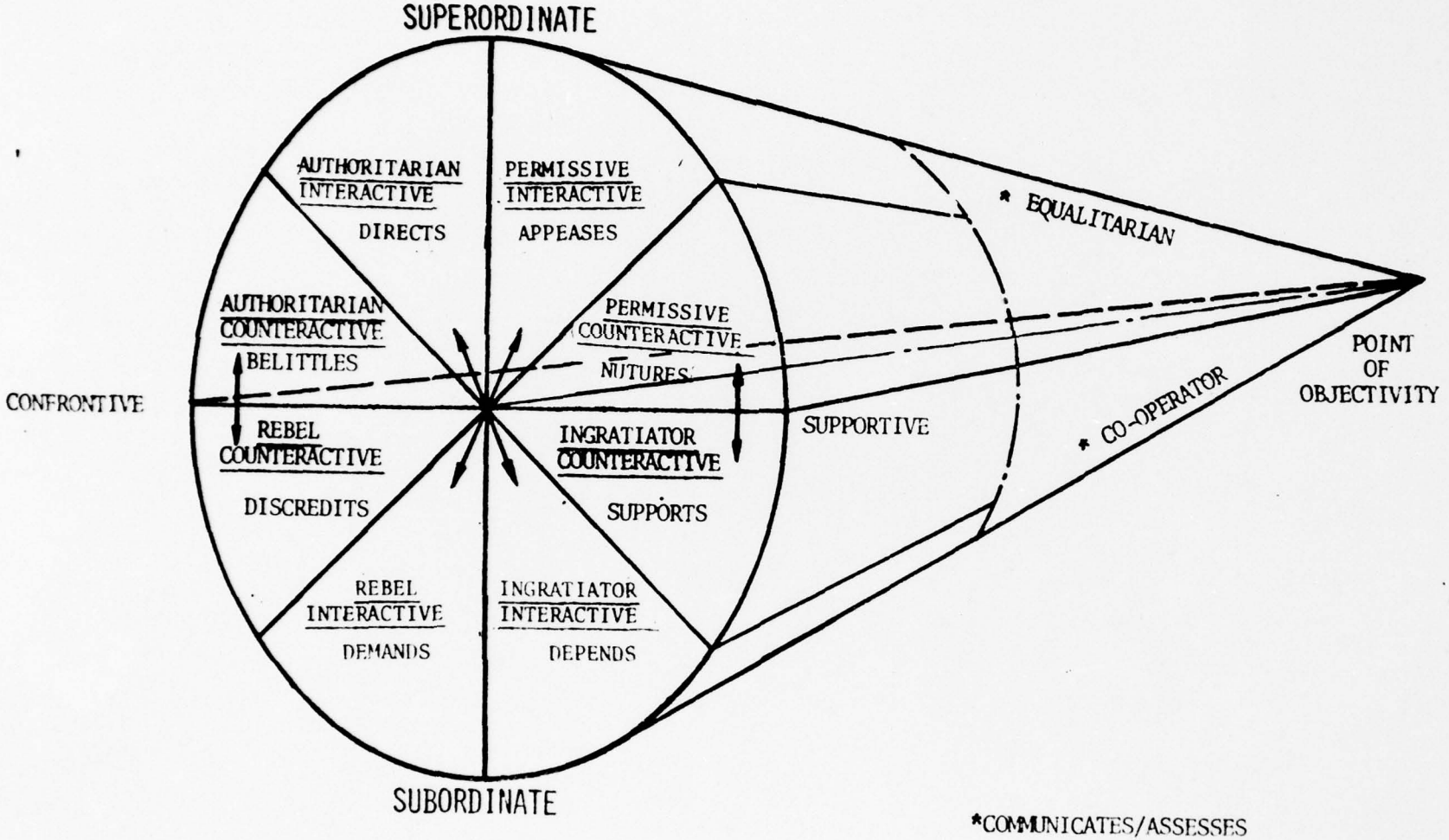
This study is directed toward reconciling the widely varied systems and theories to provide a coherent context within which to evaluate research findings and from which to formulate more comprehensive concepts or leadership dynamics.

METHODOLOGY

One hundred and four employed part-time students were given a battery of instruments selected to measure various theoretical positions related to authoritarianism. Their time was volunteered from

ROLE REACTION MODEL

Figure 1



active class periods and 100% participation was secured so that the only selective factors operating were those which brought them to night classes.

Instruments:

The measures selected were in most cases those used by the researchers themselves. The included the F-Scale by Sanford, the Dogmatism Scale by Rokeach, the Intolerance for Ambiguity Scale by Frenkel Brunswick, and the Liberal Scale from Cattell's 16 PF were used. An old test by Blake-Moutoun for measuring their five positions was used. An experimental instrument by Costley (1969) was utilized to measure McGregor's "Theory Y" and "Theory X" concepts since he seemingly did not himself create any tools to measure his constructs.

The simple authoritarian, equalitarian, and permissive scales from the RPM model were measured with the Supervise Ability Scale (SAS) by Elsass and Sweney (1972). This instrument measures the social pressure to play roles while the RPM, itself, measures preferences.

Figure 1 provides the model upon which the Role Reaction Test (RRT) is based. It assumes that in dynamic interaction roles are shaped to fit the role demands made by the other member(s) in the system. Thus, Counteractive Authoritarian Role is formed to resist the pressures of the Counteractive Rebel but the Interactive Authoritarian Role is genereted to meet the dependency needs of the Interactive Ingratiator. These reactions to each other tend to set up self perpetuating responses which tend to establish role traits over time.

Since the Equalitarian and Critic roles are perceived to be objective and non-manipulative they are not affected by role interaction and hence do not have the two components formed for Authoritarian, Rebel, Permissive,

TABLE 1

List of Tables

1. Equalitarian	RRT	Sweney and Fiechtner, 1973
2. Cooperator-Critic	RRT	Sweney and Fiechtner, 1973
3. Authoritarian Counteractive	RRT	Sweney and Fiechtner, 1973
4. Permissive Counteractive	RRT	Sweney and Fiechtner, 1973
5. Rebel Counteractive	RRT	Sweney and Fiechtner, 1973
6. Ingratiator Counteractive	RRT	Sweney and Fiechtner, 1973
7. Authoritarian Interactive	RRT	Sweney and Fiechtner, 1973
8. Permissive Interactive	RRT	Sweney and Fiechtner, 1973
9. Rebel Interactive	RRT	Sweney and Fiechtner, 1973
10. Ingratiator Interactive	RRT	Sweney and Fiechtner, 1973
11. Authoritarian	SAS	Elsass and Sweney, 1971
12. Equalitarian	SAS	Elsass and Sweney, 1971
13. Permissive	SAS	Elsass and Sweney, 1971
14. Balanced Manager	9,9	Blake and Mouton, 1964
15. Task Oriented Manager	9,1	Blake and Mouton, 1964
16. Compromising Manager	5,5	Blake and Mouton, 1964
17. People Oriented Manager	1,9	Blake and Mouton, 1964
18. Retreating Manager	1,1	Blake and Mouton, 1964
19. Fascism Scale	F-Scale	Sanford, et al., 1950
20. Dogmatism Scale	DS	Troldahl, 1965
21. Ambiguity Tolerance Test	ATT	Frenkel-Brunswick, 1945
22. Least Preferred Co-Worker	LPC	Fiedler, 1954
23. Most Preferred Co-Worker	MPC	Fiedler, 1954
24. Assumed Similarity of Opposites	ASO	Fiedler, 1954
25. Suspiciousness	16Pf	Cattell and Eber, 1964
26. Dominance	16PF	Cattell and Eber, 1964
27. Liberal	16 PF	Cattell and Eber, 1964
28. Theory Y (Organiz. Assumptions)	Y_o	Costley and Downey, 1969*
29. Theory X (Organiz. Assumptions)	X_o	Costley and Downey, 1969*
30. Theory Y (People Assumptions)	Y_p	Costley and Downey, 1969*
31. Theory X (People Assumptions)	X_p	Costley and Downey, 1969*
32. Theory Y(Managerial Assumptions)	Y_m	Costley and Downey, 1969*
33. Theory X(Managerial Assumptions)	X_m	Costley and Downey, 1969*

* Based on McGregor, 1967

TABLE 2 FACTOR I AUTHORITARIAN ROLE PREFERENCE

Variance	Loading
Dogmatism	.77
Theory X, managers	.68
Fascism Scale	.64
Authoritarian, Counteractive, RRT	.50
Rebel Counteractive	.45
Conservatism (Q_1-) 16PF	.44
Authoritarian, Interactive, RRT	.43
Intolerance for Ambiguity	.39
Theory Y Managers	- .38
9-1 Management Grid	.33
9-9 Management Grid	-.32

TABLE 3 *FACTOR II* AUTHORITARIAN ROLE PRESSURE

Variable	Loading
Permissive, SAS	-.89
Authoritarian SAS	.83
Dominance (E) 16PF	.35
Fascism Scale	.32
9-1, Management Grid	.30

and the Ingratiator. Table 1 provides a list of the variables including the author and date of publication when known.

Statistical Analysis:

The instruments were scored as nearly as possible by the systems developed by the authors. The scores were than tabulated and missing data (less than .1%) were replaced with means for those scores. The data were correlated, factored using a principle component extraction and a Varimax rotation. These orthogonal factors were ordered in descending order to facilitate interpretation.

RESULTS

Applying the Guttman Criteria for terminating factorization, eleven factors were obtained. All of the factors would be interpreted in general concept terms although there was a marked tendency for factors to follow instruments as has been noted in other studies by Cattell (1964).

Factor I has been identified as Authoritarian Role Preference because it is loaded by both Authoritairan Scales from the Role Reaction Test which seems to measure the respondent's vague wishes. The other measures such as the Dogmatism Scale, McGregor's Theory X" and the F-Scale, are also in opinionnaire form and would measure the Alpha motivational component found by Cattell, Radcliffe and Swenev (1963). This sort of measure is unintegrated and seems to measure fantasy more than practice Therefore, this authoritarian factor seems to tap deep seated value positions rather indicate actual behavior patterns.

TABLE 4 FACTOR III EQUALITARIAN ROLE PREFERENCE

Variable	Loading
Trusting (L-), 16 PF	.77
Equalitarian, RRT	.67
Rebel, Interactive, RRT	- .61
Dominance, (E), 16 PF	- .60
Rebel, Counteractive, RRT	- .53
Liberal (Q_1+) 16 PF	.36
Authoritarian, Counteractive, RRT	- .33

TABLE 5 FACTOR IV EQUALITARIAN ROLE PRESSURE

Variable	Loading
Equalitarian Pressure, SAS	.85
Permissive, Counteractive, RRT	.46
Authoritarian Pressure, SAS	-.39
Ingratiating, Interactive, RRT	.34
Permissive Pressure, SAS	-.30
Authoritarian, Counteractive, RRT	.30

Factor II has been identified as Authoritarian Role Pressure vs Permissive Role Pressure because of the dominance of these two scales from the Supervise Ability Scale. This instrument is in a forced ranking form and is preceded by social desirability instructions which generate social pressure in the response patterns. This would yield results at a superego or gamma level according to the results found by Cattell et al. This level of measurement yields integrated scores which incorporate social reality and have been found to be predictive of overt behavior. The low loadings of opinionnaire type instruments suggest that this is sampling a different domain of measurement which might also load actual behavior had they been included in the study.

Equalitarian Preference is the title given the third factor. The high trusting score and low dominance and rebel scores seem to fill out the total concept. Dominance carries with it much compensatory stubbornness so the equalitarian should not be considered as being free of these qualities rather than being submissive.

These scales all utilize opinionnaire type of questions and hence this factor is more related to fantasy and basic value positions than it is to overt behavior. This kind of equalitarianism is manifested on an unintegrated alpha level.

Factor IV is identified as Equalitarian Role Pressure because of the high Equalitarian loading from the Supervise Ability Scale. The level of measurement is associated with the superego or gamma component and seems to be linked to social reality. As in other pressure scales there is a greater likelihood that this kind of attitude will culminate in active behavior than is true for

TABLE 6 FACTOR V BALANCED MANAGER

Variable	Loading
1,1 Management Grid (Retreater)	-.77
9,9 Management Grid (Balanced)	.74
5,5 Management Grid (Compromiser)	.54
9,1 Management Grid (Task Orienter)	.44
Ingratiator, Interactive, RRT	.44
Equalitarian, RRT	.30

TABLE 7 FACTOR VI PEOPLE ORIENTED MANAGER

Variable	Loading
1-9 Management Grid (People Oriented)	.82
Least Preferred Co-Worker (favorable)	.49
Theory Y, Management	- .46
Liberal (Q_1 +) 16 PF	.32

the simple preference factors. The absence of equalitarian preference loadings emphasizes the independence of preference from pressure. Permissive preference seems to give rise to equalitarian pressure.

Factor V has been labeled Balanced Manager after the 9,9 position on the Managerial Grid. The presence of so many Grid variables suggests that this may be an instrument factor based upon the particular way in which the questions are asked. Equalitarian interpretation of the balanced manager is supported by a low positive loading from Equalitarian Preference from the RRT. This is both confirming and disconcerting since it suggests that this type of measurement is more unintegrated than integrated. The Ingratiator Interactive loading suggests that Blake's 9,9 may be more of a subordinate than has been indicated before.

Factor VI is predominated by the People Oriented 1,9 scale from the Management Grid. The absence of any of the Permissive Scales was surprising since this is the interpretation often given in describing this position on the grid. This kind of manager seemingly rates his Least Preferred Co-Worker high and rejects "Theory Y" management as described by McGregor. The presence of liberal experimentation gives this position some of the "unrealistic" qualities noted by Blake.

Factor VII seemed to tap Fiedler's Contingency Model and was hence entitled Assumed Similarity between Opposites. The tendency to polarize

TABLE 8 FACTOR VII ASSUMED SIMILARITY BETWEEN OPPOSITES

Variables	Loadings
Assumed Similarity between Opposites (ASO)	.78
Least Preferred Co-worker(LPC) (favorable)	.51
5,5 Management Grid (Compromiser)	-.35
Tolerance for Ambiguity	.35

TABLE 9 FACTOR VIII CONTEMPTUOUS INDULGENCE

Variables	Loadings
Most Preferred Co-worker (MPC) (unfavorable)	.81
Authoritarian Interactive, RRT	.45
Permissive Counteractive, RRT	.30

TABLE 10 FACTOR IX SUPPORTIVE VALUES

Variable	Loadings
Ingratiation Counteractive, RRT	.72
Permissive Interactive, RRT	.58
Permissive Counteractive, RRT	.46
Intolerance for Ambiguity	-.43
Ingratiating Interactive, RRT	.30

observations about others has been associated with dogmatism and authoritarians and hence it was surprising not to find some negative loadings for these variables on this factor. The logical relationships between ASO and LPC has been frequently noted by researchers so the appearance of both on this factor was expected. Tolerance for Ambiguity is also logical but the negative loadings of the compromiser on the factor suggest that a high Assumed Similarity between Opposites alleviates the need for compromise.

The eighth factor was identified as Contemptuous Indulgence because it seemed to capture its dynamic from an unfavorable attitude toward the most Preferred Co-Worker (MPC) from the Fiedler Model and the two kinds of patronizing Roles from the Role Reaction Test. If the MPC is viewed unfavorably, then all subordinates are. The Authoritarian Interactive feels compelled to meet dependency needs in subordinates by giving explicit directions and guidance via punishment. The Permissive Counteractive Role involves giving encouragement and positive support but seems to be predicated on the same assumption of subordinate inferiority and helplessness.

Factor IX seems to tap genuine supportiveness and tolerance and has been identified as Supportive Values becuase it derives its loadings from all four supportive scales from the RRT which measure value laden role preference. The positive loadings of Tolerance for Ambiguity emphasizes the complex nature of that scale since it loads three other factors as well but helps with the identification of some of the dynamics involved in supportiveness.

TABLE 11 FACTOR X PEOPLE TOLERANCE

Variable	Loadings
Theory Y - People (Democratic)	.88
Theory X - People (Autocratic)	-.87
Objective Critic, RRT	.45
Theory Y, Management	.36
Permissive Counteractive, RRT	.31
Authoritarian Counteractive, RRT	-.31
Ingratiator Counteractive, RRT	.30

TABLE 12 FACTOR XI ORGANIZATIONAL TOLERANCE

Variables	Loadings
Theory Y, Organization (Democratic)	.70
Theory X, Organization (Autocratic)	-.61
Objective Critic, RRT	.48
Least Preferred Co-worker	.37
Rebel Interactive, RRT	.30

Factor X is defined as People Tolerance from the Costley and Downey instrument based upon McGregor's "Theory X" and "Theory Y" assumptions. These two scales have about the same loadings in opposite directions. The objective critic has a prominent positive loading. The presence of Permissive loading indicates that "Theory Y" assumptions about people may include more Permissiveness than Equalitarian.

Factor XI is another loaded primarily from the Costley and Downey Instrument. In this case the McGregor's "Theory Y" and "Theory X" assumptions are applied to organizations so it is entitled Organizational Tolerance. The individual who perceives his organization to be "Theory Y" can afford to be an Objective Critic or even play the Rebel Interactive role if need. He also views his Least Preferred Co-Worker fairly favorably. These findings correpond to the high correlations found by Sweney (1973) on the Air Force between Objective Superordinates and Objective Subordinates. Tolerant organizations seem to outlast individual managers. Objective Subordinates also consistently perceive their organizations to be more tolerant than do more manipulative subordinates (Sweney, 1973).

DISCUSSIONS

The attribution of causality to correlational evidence has already been exposed as a fault in logic, but by the same token correlations can almost always be interpreted as indicating the mutual compatibility of two sets of conditions. The factors found indicate the complexity of a field which heretofore has been explored piecemeal. The factors emphasize the cruciality of the mode of

measurement and the relative independence of a number of concepts and models which have been universally considered by scholars to be similar.

The critical deficiency of this study, once the size of the sample has been excused, was the absence of clear-cut behavioral criteria or ratings by others knowledgeable about the respondent's leadership or followership behavior.

The distinction between the Permissive and Equalitarian roles is still unclear. In the role pressure area measured by the SAS, the self-ipsatized nature of the test put all three scales in negative relationships. There still is the confounding probability that equalitarian role pressure is more related to permissive role preference than it is to equalitarian role preference even though these scales have been face-validated by independent judges.

SUMMARY AND CONCLUSIONS

A sample of one hundred-three working students were given a battery of instruments designed to measure a wide variety of leadership instruments. In spite of the intended homogeniety and constraints on variable space, one-third as many factors as variables emerged indicating much greater complexity to the areas than originally assumed. Since all of the models assumed around two or three independent roles or types of leadership, it would seem that all of them are naively over-simplified. Although the eleven factors were readily interpreted, they had to be related to specific models or instruments rather than universal principles. This suggests that until an item-by-item factor analysis is possible, the constructs from these leadership models will have to be retained as separate and independent concepts.

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Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER: AFOSR - TR - 77 - 0871	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle): AN INTEGRATIVE FACTOR ANALYSIS OF LEADERSHIP MEASURES AND THEORIES.	5. TYPE OF REPORT & PERIOD COVERED: Interim Scientific rept.
	6. PERFORMING ORG. REPORT NUMBER: Technical Report No. 115
7. AUTHOR(s): Arthur B. Sweney, Leslie A. Fiechtner, Robert J. Samores	8. CONTRACT OR GRANT NUMBER(s): AF-AFOSR-77-2001 - 77
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Wichita State University, Center for Human Appraisal and Comm. Research, Wichita, Kansas 67208	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: 61102F 9778-01
11. CONTROLLING OFFICE NAME AND ADDRESS: Air Force Office of Scientific Research (NL), Bolling AFB DC 20332	12. REPORT DATE: April 1977; 13. NUMBER OF PAGES: 13
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): 21p. TR-115	15. SECURITY CLASS. (of this report): Unclassified; 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Authoritarian	Response to Power	F-Scale
Contingency Model	Role Response Model	Subordinate Roles
Grid Management	Role Pressure	
Theories X and Y	Role Preference	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The Factor Analysis of thirty three superordinate and subordinate role scales yielded eleven factors which were identified as Authoritarian Role Preference, Authoritarian Role Pressure, Equalitarian Role Preference, Equalitarian Role Pressure, Balance Manager, People Oriented Manager, Assumed Similarity between Opposites, Contemptuous Indulgence, Supportive Values, People Tolerance, and Organizational Tolerance.

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